

CLAIMS

1. A waterproof and breathable sole for shoes, having a structure that comprises:
  - a mid-sole component (10, 110) with a membrane (11, 111) made of a material that is impermeable to water and permeable to water vapor and is connected in spots with a lower protective layer (14, 114) made of a material that is resistant to hydrolysis, water-repellent, breathable and/or perforated;
  - a tread (15, 115) made of perforated elastomer that is joined perimetricaly and hermetically to the component (10, 110);5 said structure being characterized in that said membrane (11, 111) is associated with said protective layer (14, 114) by way of a thermoreactive adhesive (13, 113).
2. The sole having the structure according to claim 1, characterized in that said membrane (11) and said protective layer (14) associated therewith are joined hermetically to said tread (15), which is overmolded or assembled 10 in place on said component (10).
3. The sole having the structure according to claim 1, characterized in that said membrane (111) and said protective layer (114) are part of a mid-sole (110) with a preassembled insert that comprises a perimetric element (117) that is overmolded or assembled in place and surrounds said membrane (111) and said protective layer (114) and is joined to them 15 hermetically, said insert (110) being coupled to said tread (115), which is overmolded or assembled in place thereon.
- 25 4. The sole according to one or more of the preceding claims, characterized in that said thermoreactive adhesive is a thermoplastic polyurethane adhesive.
5. Use of thermoreactive adhesives to join in spots a membrane (11, 111) made of a material that is impermeable to water and permeable to 30 water vapor and a protective layer (14, 114) made of a material that is

resistant to hydrolysis, water-repellent, breathable and/or perforated, in order to provide waterproof and breathable soles for shoes.

6. The use according to claim 5, characterized in that said thermoreactive adhesive is a thermoplastic polyurethane adhesive.
- 5 7. A method for making a waterproof and breathable sole for shoes that has a structure having a mid-sole component (10, 110) with a membrane (11, 111) made of a material that is impermeable to water and permeable to water vapor and is connected in spots with a lower protective layer (14, 114) made of a material that is resistant to hydrolysis, water-repellent, 10 breathable and/or perforated; a tread (15, 115) made of perforated elastomer that is joined perimetricaly and hermetically to the component (10, 110); comprising a step of connecting said membrane (11, 111) to said protective layer (14, 114) by way of a thermoreactive adhesive (13, 113).